

mind, but rather the general human mind, that the psychologist analyses. His omission to make it clear that psychology is really the science of human nature, and not a mere description of the mental states of an individual, or of as many individuals as possible, does not, however, destroy the value of his results. When he describes the science of psychology as being a sort of resultant of the contributions of various people who "chronicle their states," this is only an imperfect description of the method of psychology and of what it implies. To state the case in this way is to lose sight of the fact that society is an organism, and to consider it as an aggregate of isolated individuals; but, without any elaborate analysis, we may show that the introspective method of Mr. Thompson and of the older psychologists really implies more than the examination of any number of individual minds merely as such.

There is probably quite as much minute observation of mental states to be found in literature with no scientific pretensions,—in novels and autobiographies, for example, —as in books of psychology. Why has this kind of "introspection" first of all a literary, and only secondarily a scientific, interest? Is it not because the states of mind described are regarded as states of a particular mind, because they are merely elements in the description of some one personality, because they have no distinct reference to a law of mind in general? Of course some things in books of psychology have only a personal interest, and some things in books of pure literature may have a scientific interest; but there is no difficulty in distinguishing the two kinds of "introspection" when we meet with them, or in recognising them as essentially different.

The scientific character of the introspective method as being one that yields general conclusions is quite evident in Mr. Thompson's book, in spite of his omission definitely to point out this character. It has already been said that his "System of Psychology" furnishes new evidence of the progressive character of psychological studies. We may conclude by saying that, although in some respects an unequal book, it is decidedly an important contribution of America to the treatment of psychology on the lines with which English readers are most familiar.

OUR BOOK SHELF

The Student's Flora of the British Islands. By Sir J. D. Hooker, K.C.B., &c., &c. Third Edition. (London : Macmillan and Co., 1884.)

THE lover and collector of our wild plants may congratulate himself on the number of botanists of the first rank who have devoted their energies to his service. Bentham, Hooker, and Babington have all of them written hand-books of the British flora, all of them excellent in their way. In the one now before us we have the well-known lucidity of description characteristic of the author combined with the most recent extensions of our knowledge as regards British plants. Very great care and labour have been expended in bringing the "Student's Flora" abreast of the most recent discoveries. The number of species of flowering-plants added to the British flora since the publication of the last edition in 1878 is not inconsiderable, indeed is surprising, considering the limited extent of the field and the number of workers on it. In addition

to the introduction of these new species, the limits of species and sub-species have been carefully revised, and the "critical" genera submitted to the criticism of experts; the genus *Potamogeton* having been, in particular, revised by Mr. Arthur Bennett. Nor has the physiological side of the subject been neglected. For the first time, as far as I am aware, in any local flora of importance, the characters of the genera concerned in the process of fertilisation are given, especially those illustrated by the writings of the late Hermann Müller. Under the diagnosis of each genus it is stated—as far as is known—whether the plants belonging to it are wind-fertilised, insect-fertilised, or self-fertilised; whether honey is secreted in the flower or not; and whether the stamens and stigma ripen together, or, if not, which is the earlier. The result is that the field-student has now a hand-book of the characters of the plants that he meets with in wood and field, by stream and bog, and on the mountain-side, more complete than any which has heretofore been ready to his hand.

A. W. B.

Elementary Text-Book of Zoology. General Part and Special Part, Protozoa to Insecta. By Dr. C. Claus. Translated and edited by Adam Sedgwick, M.A., Fellow and Lecturer of Trinity College, Cambridge, with the assistance of F. G. Heathcote, B.A., Trinity College, Cambridge. (London : W. Swan Sonnenschein and Co., 1884.)

PROF. CLAUS'S "Elementary Text-Book of Zoology" has long been known as an excellent introduction to this branch of biology, and there was a certain charm in the way in which the introductory chapters, constituting the "General Part" of the work were written, that marked out the "Lehrbuch der Zoologie" as something different from many of the text-books that had preceded it. Its well-merited success in parts of the Continent where German is spoken is a matter of congratulation, and Mr. Sedgwick has translated it "with a view of supplying the want which," he tells us, "has long been felt by teachers as well as students in this country, of a good elementary text-book of zoology." It appears to us a pity that with this local demand for a good introduction to zoology, there should be apparently no other way of supplying it than by translating the works of our illustrious neighbours. It is certainly not the way that the schools of the great Continental centres are supplied, nor do we believe that it is from any want of original power to supply the need among our own zoologists. This view of the subject apart, the English student of zoology will find this translation of Claus's "Lehrbuch" a very excellent introduction. It is true that he may now and then note that it was not written for him, that the illustrations of specific forms referred to are not always, even when they might have been, within his easy reach; that some of the contributions of his countrymen are referred to as if they had first appeared in a foreign tongue, and that many very important ones are overlooked, but these will be scarcely difficulties in his way; and if they are, on application to an intelligent teacher they will be soon got over.

The original German has, with a few "unimportant exceptions, been closely followed throughout," but has it not been too closely adhered to, when it has been left altogether untranslated, as it apparently has been in the case of many very familiar families of insects? In some of these, too, the English equivalents are not perhaps of the best; thus Acanthidae (skin-bugs). In welcoming this attempt to introduce Prof. Claus's most useful work to the English reader we have no wish in any way to criticise the treatise in detail. It is got up in a very creditable manner, though a little more uniformity in the style of printing the technical words would have been desirable; thus, on the same page we find the words "Cirripedia" and "Malacostraca" in roman and in italic type, and specific names are not italicised in all cases,

while sometimes such English words as "insect," "spider," "scorpion" will be in one form of type, and sometimes in another. These are trifles, but still they are worth attending to, and they do not detract from the general merit of this translation, which we would freely place in the hand of any student.

Bosnien, Land und Leute. By Adolf Strausz. 2 vols. (Vienna, 1882-4.)

AFTER the occupation of Bosnia and Herzegovina by Austria in 1878, the want of an authoritative and comprehensive treatise on those hitherto neglected provinces of European Turkey soon became manifest. This want is fully supplied by the present work, on which the author has been engaged for the last four years, and for the composition of which he has qualified himself by repeated visits to the region he has undertaken to describe. The first volume, issued two years ago, is mainly historical and ethnographic, and embodies a complete history of the country, from the arrival of the Slavs in the fifth century, down to the Austrian occupation in 1878. Special sections are devoted to the various ethnical elements, Mohammedan and Christian Bosnians, Jews, Albanians, Zinzars, and Gypsies. These are all adequately treated, except the Zinzars (Macedo-Roumanians or Kutz-Vlacks), the account of whom is confusing and even contradictory. The author seems unaware that their true relations to the surrounding populations, and especially to the Roumanians, now settled in Moldavia and Wallachia, north of the Danube, have been placed in a clear light by the recent investigations, especially of Roesler and P. Hunfalvy. The volume concludes with a series of social sketches, in which the habits and customs, legends, traditions, religions, national aspirations of the people are ably dealt with. The second volume, whose publication was delayed by various causes till the present year, is perhaps the more important of the two. It contains a complete description of the provinces, their geographical features, climate, fauna, flora, natural and industrial resources, administration, present condition and future prospects. On all these points the author speaks with great authority, and brings together a vast amount of information at first hand. Although bitterly opposed to the Austrian occupation, he believes that the inhabitants will eventually acquiesce in a step which political considerations had in any case rendered inevitable. The area of the country is given at about 52,000 square kilometres, an estimate based on recent but still incomplete surveys. The population, given by the Salname of 1877 at 2,047,000, was reduced by the census of 1879 to 1,558,000, of whom 448,000 were Mohammedans, 496,000 Orthodox Greeks, 209,000 Roman Catholics of the Latin rite, and 3400 Jews. The work unfortunately appears without either map or index, for which two meagre tables of contents are poor compensation.

LETTERS TO THE EDITOR

- [The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]
- [The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to insure the appearance even of communications containing interesting and novel facts.]

The Solar Corona and After-Glow

THE inclosed extract from a letter from the Rev. A. W. Heyde, resident at Kailang in Lahoul, a hill state in the North-West Himalaya (N. lat. $32^{\circ} 34' 10''$, E. long. $77^{\circ} 4' 10''$), 10,000 feet above sea-level, gives an interesting notice of the solar corona and after-glow, and affords some reason for the inference that the conditions producing these appearances have been persistent, although they may not have been observed in the cloudier

and more hazy atmosphere over the plains of India. Mr. Heyde's letter is dated November 3:-

"The corona round the sun has been visible since my last letter to you in July, whenever the sky was clear. It was not always equally distinct, but never entirely absent. It is beautifully distinct to-day. The same has been the case with the after-glow, which no doubt results from [the same conditions as] the corona."

The following extract from the same letter is also of interest:-

"I think I have mentioned already, in former letters to you, that since about twelve or fifteen years the latter half of August and the whole of September and October have become very unsettled as regards the weather, rain or snow occurring now often during these months, which, as a rule formerly, were a time of fine, clear weather. These untimely precipitations interfere very unpleasantly with the haymaking and harvesting in the valley now nearly every year, of which many complaints are heard. . . . A similar experience is made in Ladakh and other parts of the Western Himalayas. Officers who took part in the triangulation of Ladakh during the four or five seasons between 1860 and 1870 say they never could have done their work if at that time the sky over Ladakh had always been so cloudy, and the high ranges so frequently enveloped in clouds, as is now the case."

In corroboration of this last remark I may mention that the hopes that had been entertained of obtaining a valuable series of actinometric observations at Leh, for which purpose two trained observers were deputed to that station rather more than a twelvemonth ago, have been so far grievously disappointed. The atmosphere of Leh was believed, on the reiterated assurance of former residents, to be remarkable for its clearness and freedom from cloud and haze. From the actinometric registers received during the past year, and the notes which accompany them, this appears to be very far from the case.

HENRY F. BLANFORD

Meteorological Office, India, 4, Middleton Row, Calcutta,
November 21, 1884

Flying-Fish do not Fly

FLYING-FISH are incapable of flying for the simple reason that the muscles of their pectoral fins are not large enough to bear the weight of their body aloft in the air. The pectoral muscles of birds depressing their wings weigh, on an average, $\frac{1}{4}$ of the total weight of the body, the pectoral muscles of bats $\frac{1}{3}$, the muscles of the pectoral fins of flying-fish only $\frac{1}{8}$. The impulse to which flying-fish owe their long shooting passage through the air is delivered, while they are still in the water, by the powerful masses of muscle on both sides of their body, which are of much greater breadth than in the case of the herring or any other fish of their own size.

The "flickering of the fins," which Dr. John Rae (NATURE, December 4, p. 102), like many others before him, takes for a rapid muscular movement of the pectoral fins, is only a vibration of their elastic membrane, and is to be referred to the same laws as those which govern the flapping of a tight-set sail when a ship under a stiff breeze is driving close to the wind. The flapping or vibration at once springs up whenever the sail gets parallel to the wind.

The more rapidly a flying-fish darts out of the water, the greater is the momentum with which the air presses on its outspread pectoral fins. Should, now, the atmospheric pressure induce these fins into a horizontal position parallel to the wind, their vibration is a necessary result. Let the outspread pectoral fins of a dead flying-fish be held horizontally before the opening of a pair of bellows, and the fins will be seen to vibrate as soon as the current of air passes under them. For full proofs of the accuracy of these propositions I beg to refer to my paper, "The Movements of Flying-Fish through the Air" (Leipzig, 1878).

Zoological Institut, Kiel, Dec. 15, 1884

K. MÖBIUS

Iridescent Clouds

IN addition to the particulars given in NATURE for December 18, 1884 (p. 148) of the brilliantly-coloured clouds, the following observations made here may be interesting. They were visible every day from the 6th to the 13th instant, except it be on the 9th, and at all times of the day, but only strikingly noticeable near sunrise and sunset. The colours did not appear